Annexure: 1 MODULE WISE COURSE CONTENT AND OUTCOME

TABLE: MODULE WISE COURSE CONTENT AND OUTCOME				
Sl. No	**Module Name**	**Module Content**	**Module Learning Outcome**	**Duration (Hrs)**
1	Introduction to BIM	1. Importance of BIM in modern construction 2. BIM dimensions (3D, 4D, 5D, etc.) 3. Overview of BIM standards and guidelines	Understand the key concepts and applications of BIM	6
2	BIM Tools and Software Basics	1. Introduction to BIM tools: Revit, Navisworks, and more 2. Basic 3D modeling in Revit 3. Practical: Create basic BIM models	Familiarize with BIM tools and perform basic 3D modeling	9
3	Advanced BIM Modeling and Collaboration	1. Multi-disciplinary BIM modeling 2. Collaborative workflows and CDEs (Common Data Environments) 3. Hands-on: Integrating architectural, structural, and MEP models	Develop detailed models and collaborate effectively in BIM projects	9
4	Clash Detection and	1. Using Navisworks for clash detection 2. Resolving conflicts	Perform effective clash detection	6

	Coordination	in multi-disciplinary models 3. Practical: Perform clash detection and generate reports	and resolve conflicts	
5	BIM for Construction Management	1. BIM in project scheduling (4D) and cost estimation (5D) 2. Resource planning and tracking 3. Hands-on: Link schedules and costs to BIM models	Use BIM for project planning, scheduling, and cost management	6
6	Sustainability and Lifecycle Analysis	1. Lifecycle assessment of construction projects using BIM 2. Green building practices and energy analysis 3. Case studies on sustainable construction	Apply sustainability principles to construction projects using BIM	6

ANNEXURE: 2 Industry Use Cases/Final Projects

1. BIM Overview Report: Prepare a report detailing how BIM transforms traditional construction practices.
2. Basic Building Model: Create a 3D model of a small residential building in Revit, showcasing basic architectural elements.
3. Clash Report: Perform clash detection in a multi-disciplinary BIM model and present a report with resolved conflicts.
4. 4D BIM Model: Develop a 4D BIM model showing construction sequencing and resource allocation for a commercial project.
5. Green Building Plan: Use BIM to design an energy-efficient building with a focus on material sustainability and lifecycle optimization.

TABLE: LIST OF INDUSTRY USE CASES (PROJECTS THAT COMPREHENSIVELY COVER ALL THE LEARNING OUTCOMES)	
S.NO	**Final Projects**
1	Create a BIM model integrating architectural, structural, and MEP components, ensuring consistency and accuracy.
2	Perform clash detection using Navisworks on a complex project model and propose actionable solutions for resolving conflicts.
3	Develop a 4D BIM model to visualize construction sequencing and resource allocation for a mid-sized project.
4	Use BIM to design a sustainable residential or commercial building, focusing on energy efficiency and material optimization.
5	Link a BIM model to cost data for a construction project, generating a detailed cost estimate and budget analysis.
6	Conduct a lifecycle assessment of a building using BIM tools, highlighting environmental impact and suggesting sustainability improvements.
7	Develop a digital twin of a building using BIM, enabling real-time monitoring and efficient facility management.
8	Create a BIM model for an infrastructure project (e.g., bridge, road),

	incorporating design, analysis, and scheduling elements.
9	Design a collaborative BIM workflow using cloud-based tools to manage and share project files effectively.
10	Perform an energy analysis on a BIM-designed building to evaluate and optimize its energy efficiency.

ANNEXURE :3 Assessment Rubrics

TABLE: COURSE ASSESSMENT RUBRICS (TOTAL MARKS: 70)				
ASSESSMENT CRITERIA	**FAIR (50%-64%)**	**GOOD (65%-79%)**	**EXCELLENT (80%-100%)**	**WEIGHTAGE (MARKS)**
Practical Skills Proficiency	Basic skills with limited accuracy	Competent with minor errors	Outstanding with perfect execution	20
Technical Knowledge	Minimal understanding	Sufficient knowledge application	Exceptional understanding and application	10
Project Execution	Basic project with minimal effort	Comprehensive with minor gaps	Innovative and flawless execution	30
Communication and Reporting	Basic clarity	Clear and adequate presentation	Professional and precise presentation	10